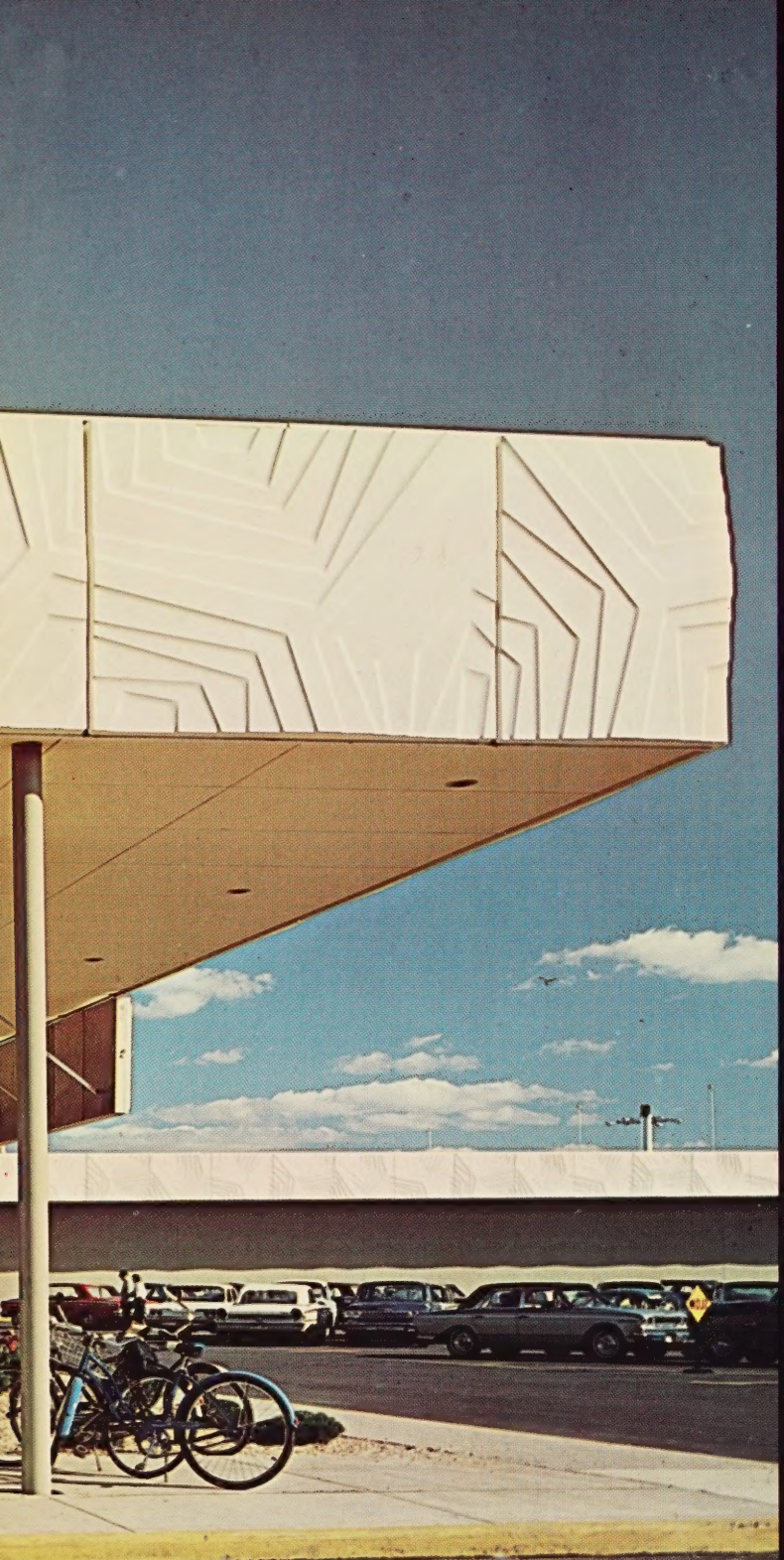
A.I.A. No. 17-A

unlimited design flexibility through form, color and texture

The Plexiglas Panel

The cover illustration of this brochure shows a number of typical facing panels of Plexiglas acrylic plastic. They are installed on building exteriors with metal framing or clips on masonry walls and as backlighted panels for completely luminous facades.

Facing panels of Plexiglas are manufactured by plastic fabricators, who offer a wide variety of standard forms and who are equipped to produce custom formed panels in accordance with design specifications. The names of panel suppliers are available from Rohm & Haas Company, Plastics Department.



Advantages of Plexiglas for Facing Panels

The wide range of colors and surface textures available in Plexiglas impart great flexibility in design to facing panels. Of major importance, is the ease and economy with which Plexiglas sheet can be formed to unlimited shapes in either large or relatively small quantities of panels.

colors

Plexiglas is available in a wide variety of standard translucent and opaque colors —ranging from low to high chroma—for use on building exteriors. Special colors can be produced where a particular requirement provides for a sufficient volume of Plexiglas.

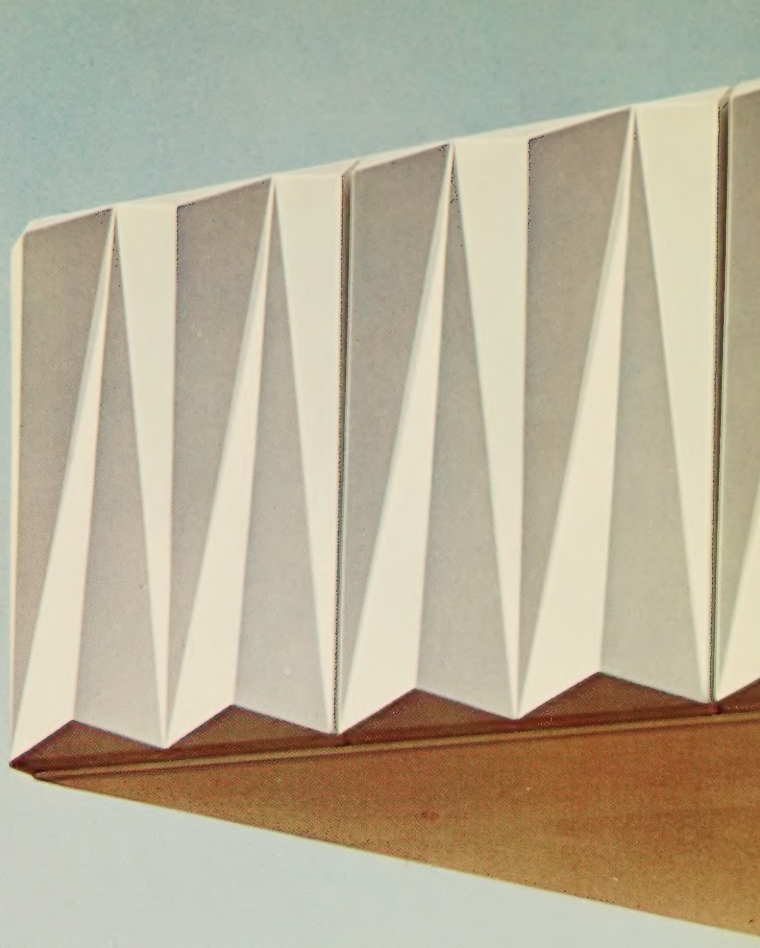
All colors recommended for exterior use are rated high in resistance to fading upon exposure outdoors, based on actual weathering tests or, in the case of custom colors, on the use of colorants which have been proven weather resistant.

Colorants used for Plexiglas are integral with the material, being incorporated in the process of manufacture. The colorant is dispersed evenly, resulting in a sheet which is completely uniform in appearance and of uniform color from sheet to sheet.

textures

Plexiglas sheet is available in a selection of surface textures. Satin surfaces and stipple patterns are not highly reflective; they are subdued in appearance. They produce an appearance of depth and a soft color effect in facing panels. In contrast, unpatterned Plexiglas with its highly reflective surface is bright in appearance and vivid in color effect.

A unique textured appearance may also be produced by forming small, shallow configurations in Plexiglas as illustrated by the background of this page.



sculptural forms

Plexiglas sheets can be formed to designs ranging from large, deep patterns which produce highlights and shadows over large areas, to precise geometric figures such as those formed into the panels illustrated on the opposite page and on page 2.

When heated to 325°F., Plexiglas sheet becomes soft and flexible and, in this condition, is formed without difficulty to simple or complex shapes with the exertion of minimum force. Because of the low forming pressure required, inexpensive molds made of wood or plaster can be used.

The excellent formability of Plexiglas is of great significance to architectural designers. First, sculptural forms are possible which cannot be obtained in most commonly used facing materials. Second, facing panels of Plexiglas are economical even in relatively low quantities because the wood or plaster molds are low in cost. The designer is thereby freed from restrictions imposed by expensive tooling which necessitates large quantity runs of custom shapes.

The wide range of colors available in Plexiglas, the variety of surface textures, and the formability of the material give the architect great latitude for creativity in the design of building exteriors.

permanence

Panels of Plexiglas retain their handsome appearance over many years because Plexiglas has the ability to withstand weathering in any climate. The material is many times more resistant to breakage than glass. It does not dent, chip, spall, erode, corrode or rot.

panel sizes and thicknesses

Plexiglas sheets are available in sizes up to 10 by 12 feet. Modular standards and ease of handling generally limit the major dimension to eight feet in facing panel installations. Panels are generally formed from .125″, .187″ or .250″ thick sheet, depending on the depth of forming in the panel.

light weight

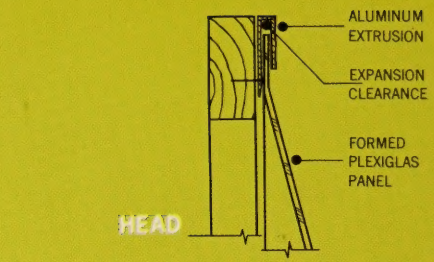
Plexiglas is less than one-half as heavy as glass, aluminum and steel. This light weight, along with its breakage resistance, makes Plexiglas easy to handle and low in installation cost.

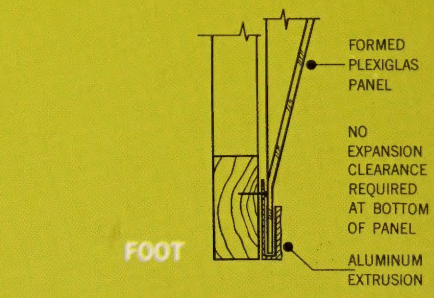
luminous panels

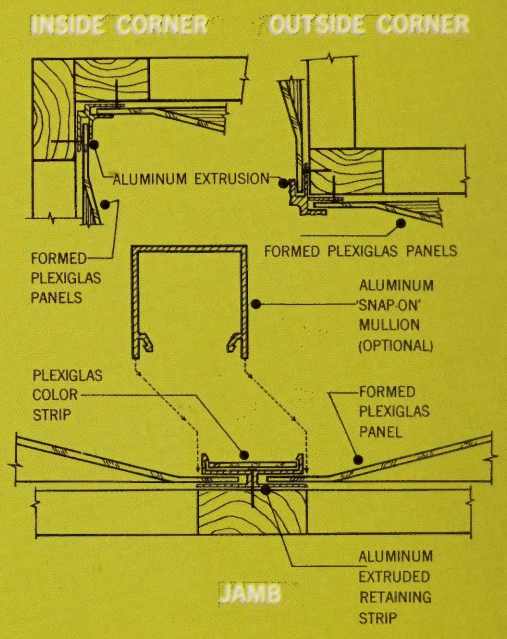
Facing panels of translucent Plexiglas transmit and diffuse light from behind the panels thus adding the element of complete luminosity to building exteriors. Letters can be attached to backlighted Plexiglas panels to provide distinctive building identification. Or identification can be omitted, the luminous panels serving to provide a pleasing nighttime appearance and acting as a light source for exterior lighting around a building.

Installation Methods

Most facing panels of Plexiglas can be formed with flat flanges or returns on all four sides, to facilitate installation in metal frames or with clips. Panels should be held on all four sides. Metal frames or mounting clips may be attached to levelled furring strips or directly to masonry walls.



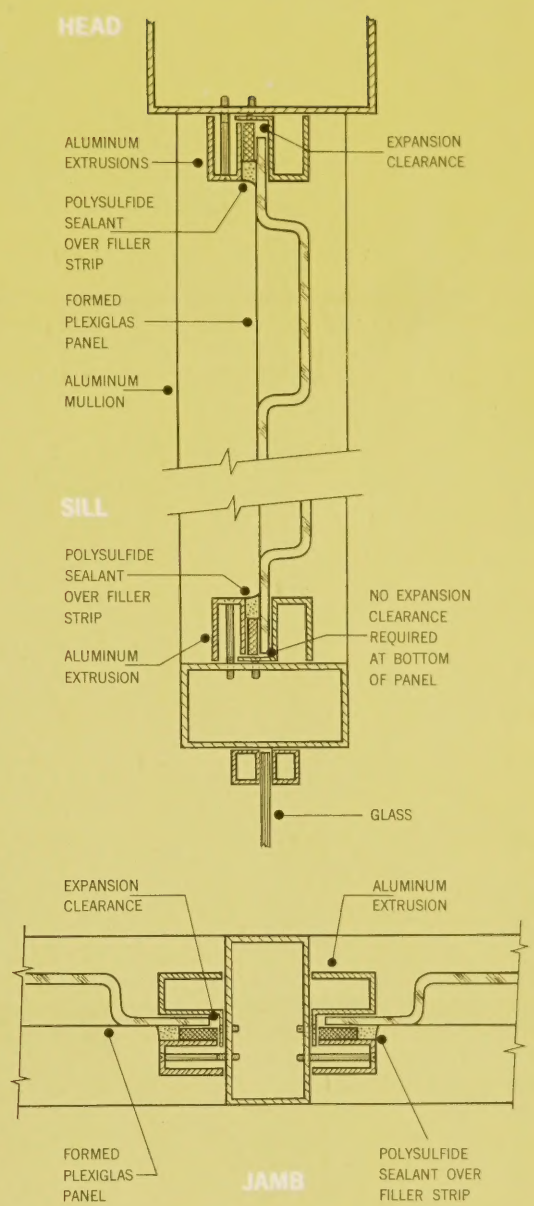




standard extrusions

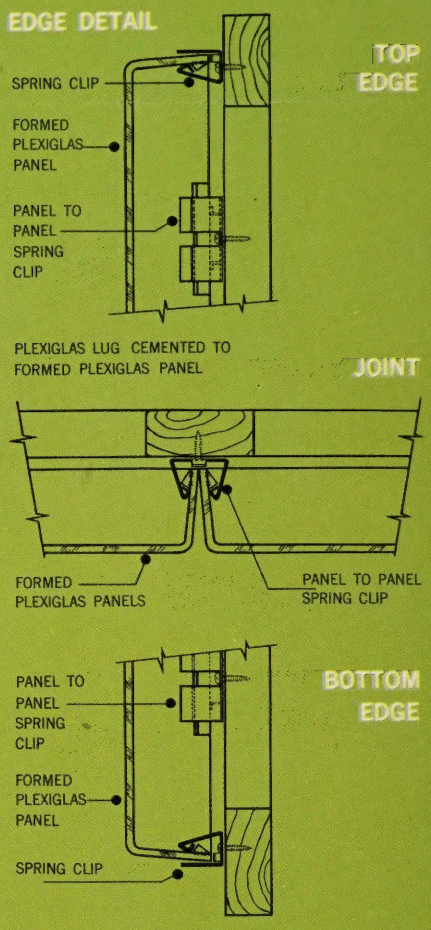
The standard extrusions shown in the above detail are available for panels of Plexiglas up to 6 feet in length and height and ⅛ or 3/16 inch in thickness. They are designed to provide for the thermal expansion and contraction of the acrylic material. With these extrusions, framing can be emphasized with mullion caps or deemphasized with Plexiglas insert strips which are then slid into a track on the face of the framing member, thus providing a continuous area of Plexiglas across the entire assembly. Various sizes of mullion caps are available for variation in frame styling and emphasis.

In addition to standard aluminum extrusions, readily available angles, bars, channels and tubing may be assembled into channels to hold the facing panels.



standard storefront framing

Many of the standard storefront framing systems may incorporate Plexiglas panels in the fascia or transom areas. Continuous beads must be used and the bead depth must be sufficient to accommodate both the thermal expansion and contraction of the Plexiglas and foreshortening of the panel under wind load.



concealed mounting

Plexiglas facing panels can be mounted with spring clips of the type shown above, which are attached to furring strips or directly to masonry. This installation method offers the advantage of eliminating frames and fully concealing the retaining metal.

There are two basic types of panel designs which can be mounted with clips:

Formed panel with returns on four sides

The clip system is applicable to these panels in panel sizes which do not exceed 4 by 6 feet. Clips should be installed on 24 inch centers around the periphery of the panel, but a minimum of 12 inches away from any corner.

U-shape channel

The clip system is applicable to U-channels up to 2 feet wide and of unlimited lengths. Returns are along the major dimension only, with open ends. Clip spacing along the returns of the U-channel can be increased to 36 inch centers.

edge engagement for Plexiglas facing panels

The following table gives recommended minimum depths of retaining beads and thermal expansion clearance for Plexiglas panels under a temperature range of -30°F to 120°F. The recommendations are based on panels which have been rigidized by forming to minimize deflection due to wind load.

Panel Dimensions in Feet	Minimum Bead Depth in Inches	Expansion Clearance for Plexiglas in Inches
2 x 2	½	⅛
2 x 4	¾	3/16
3 x 3	¾	3/16
4 x 4	⅞	¼
4 x 6	⅞	¼
5 x 5	1	5/16
6 x 6	1⅛	5/16
4 x 8	1¼	⅜
6 x 8	1⅜	⅜
8 x 8	1½	½

sealant beads and tapes

Where sealant beads and tapes are required, the sealant should be of a type that adheres to both Plexiglas and metal. It should also be sufficiently extensible to accommodate the movement of Plexiglas due to thermal expansion and contraction. The following polysulfide sealants and polybutene tapes have been evaluated for adhesion, cohesion, elasticity and cold flow and are recommended for use:

Polysulfide elastomer sealants

Aluminum Weatherban Sealer—
Minnesota Mining & Mfg. Co.
(for local offices, refer to telephone directory)

Lasto-meric Soft Aluminum—
Tremco Mfg. Company
10701 Shaker Blvd.
Cleveland 40, Ohio

Polybutene tapes

Weatherban Ribbon Sealer—
Minnesota Mining & Mfg. Co.

Tremtape Ribbon Sealer—
Tremco Mfg. Company

Other sealants and tapes can be used with Plexiglas. The sealant manufacturer and/or Rohm & Haas Company should be consulted concerning the suitability of a specific sealant for use with Plexiglas.

building code considerations

Plexiglas is a slow-burning plastic. This imposes some limitations on its use in building facing applications. However, Plexiglas has been generally accepted for use as decorative panels on buildings located outside of congested metropolitan areas and in such congested areas it has been accepted for installation as decorative panels on storefronts. These acceptances are based on favorable experience with the use of Plexiglas for wall and parapet signs, and on explicit rulings permitting the application of Plexiglas as a surfacing (illuminated or non-illuminated) on storefronts. Similar legislation and administrative rulings permit the use of Plexiglas for window glazing in areas not requiring fire protection of openings, provided the installation is not higher than 35 feet and in some jurisdictions installation of glazing up to 50 feet above grade is permitted.

typical specification

Facing panels of Plexiglas shall be manufactured by (name of panel manufacturer or manufacturers) of (⅛" or 3/16") thick Plexiglas acrylic plastic sheet. Color shall be Plexiglas (color name and number). The exterior surface shall be (surface description and number). The shape or form shall be (manufacturer's designation or as specified or drawing number).

These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and methods of use of our products are beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale. Suggestions for uses of our products should not be understood as recommendations that they be used in violation of any patents.

ATLANTA 9, GEORGIA
1430 WEST PEACHTREE STREET, N.W.
TELEPHONE: TRINITY 5-7808

BOSTON, MASSACHUSETTS
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TELEPHONE: CEDAR 5-7134

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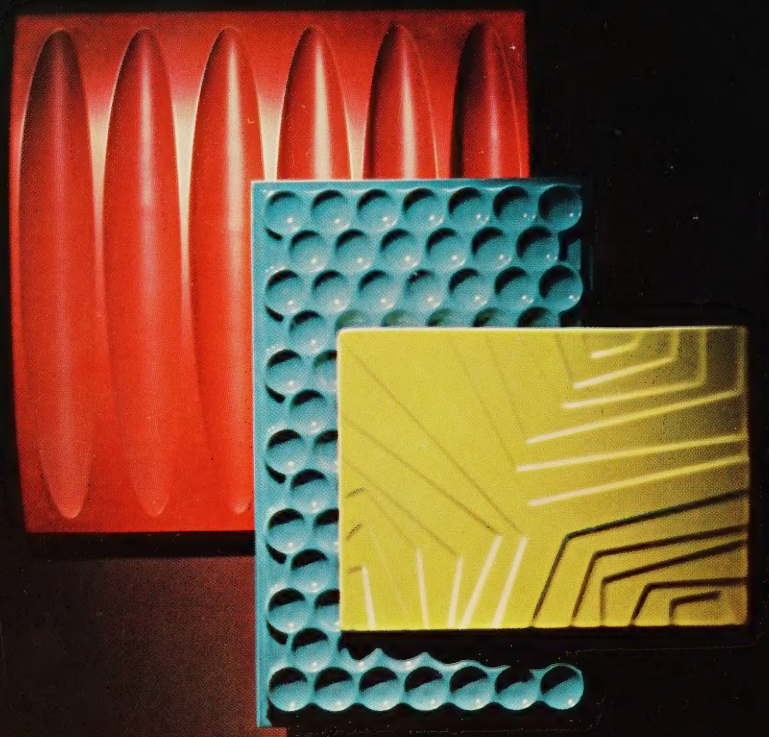

NEW YORK 1, NEW YORK
350 FIFTH AVENUE
TELEPHONE: LONGACRE 3-4154

OAKLAND 12, CALIFORNIA
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PHILADELPHIA 5, PA.
WASHINGTON SQUARE
TELEPHONE: WALNUT 5-9860

ST. LOUIS 17, MISSOURI
2200 SOUTH BRENTWOOD BOULEVARD
TELEPHONE: WOODLAND 1-0287

IN CANADA
ROHM & HAAS COMPANY OF CANADA LIMITED
WEST HILL, ONTARIO

PL-623 **ROHM & HAAS COMPANY** **PHILADELPHIA, PENNSYLVANIA 19105** FEBRUARY 19

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